

PARASITIC WASPS

by

ALAN ROWLAND

Email: morwenstow@btinternet.com

During August and September 2018, various empty and, as it later proved, occupied cocoons were found on stems of, Soft Rush *Juncus efusus* and Creeping Willow *Salix repens*.

I had not realised exactly what they were but wanted to find out what had caused them.

I saved a couple of specimens and forgot about them for a few weeks. When I went to photograph one, the pot in which it was stored had around 50 very small winged insects lying dead adjacent to the cocoon. On examination these were confirmed as wasps – two-winged and with long antennae. Each wasp was on average 0.24mm in length with antennae the same length. The cocoon, when fresh, had the consistency of candyfloss but when old and dried was more like a cotton bud in texture.

Researches on Facebook groups suggested that they were from the Family Braconidae, Subfamily Microgastinae (parasitic wasps). They are one of the most species rich subfamilies of parasitic wasps which are internal or external parasites of other insects. The Braconidae has 1300 species in the UK. Braconid wasps mainly prey on the larval stages of Coleoptera, Diptera or Lepidoptera. The wasp larvae develop from eggs laid in their hosts which are immature stages of other insects. When the wasp larvae are about to emerge to produce a cocoon, the host larvae is killed by the process. Braconidae are very host specific and are of interest as biological pest control in some countries.

The wasps were sent for determination to the country expert Dr Mark Shaw of the National Museums Scotland who identified them as *Cotesia offela*. A similar species, *C. tibilis*, may also occur on Lundy and is difficult to separate without specialist skills. They both construct similar structures and parasitize similar species, mainly noctuid moths.

I followed this up with researches using Shaw & Huddleston (1991) where I was able to piece together the life history with some help from Dr Shaw. The original species name, from 1885,



Figure 1. Cocoon on Creeping Willow.



Figure 2. Cortesia ofella adult.

was *Microgaster perspicua* which, in 1974 changed to *Apanteles ofella* before its most recent designation as *C. ofella*.

Dissecting the cotton like mass revealed what appeared to be an internal wasp's nest. This was very similar to what you expect from a full sized conventional nest. A ball of numerous small honeycomb structures with the remains of the pupal wasp cases left inside. There was no sign of any host that the egg-laying female might have injected with her eggs. However, what remains is a deflated skin which soon perishes and is blown away.

The braconid wasp cocoon is actually a mass cocoon constructed by these larvae as they exited the host body. It is produced before the central communal honeycomb arrangement which is also cooperatively produced.



Figure 3. Internal honeycomb (left) and outer covering (right).

Life Cycle

After hatching, females mate straight away and begin to lay 16-52 eggs in host caterpillars (Figure 4: 1). These develop into larvae (Figure 4: 2). Fifteen to twenty days later, larvae emerge killing the host (Figure 4: 3). These larvae cluster together abandoning the host and spin cocoons in a group and an extra layer around the cocoon cluster, where they remain for 7-10 days (Figure 4: 4) before adults hatch and the process repeats (Figure 4: 5) (Based on information extracted from Shaw and Huddleston, RES Hymenopteran Handbook)

How they overwinter is open to conjecture. They may remain in the same or a different host, most likely to be a Noctuid larva, perhaps in the cocoon stage. However *C. tibialis* is less host-specific and overwinters in partly grown *Xestia* sp. caterpillars as early instar parasitoids.

Although a fairly common species, *C. ofella* have not previously been reported from Lundy.

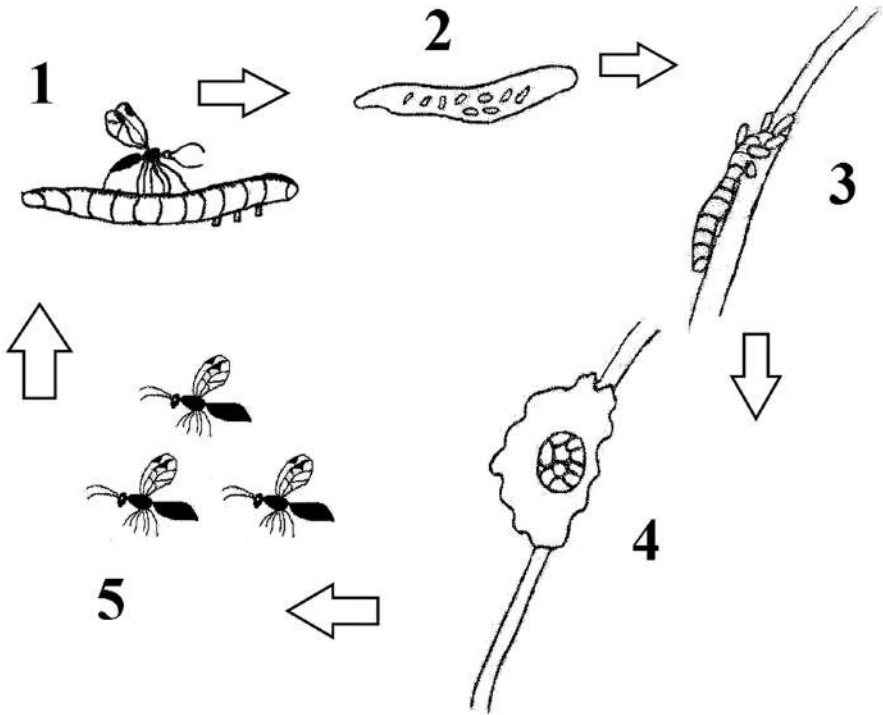


Figure 4. Parasitic wasp life cycle.

Reference

Shaw, M.R. and Huddleston, T. 1991. *Classification and biology of braconid wasps (Hymenoptera: Braconidae)* (Handbooks for the Identification of British Insects 7/11). Royal Entomological Society of London.